

SEQ ID NO:1

AAGATACTGATAATTCCAGTTTGTACCACCACCTGATGTTACTTTAAGCTTACTCCCTTCAAACGAAACAG

SEQ ID NO:2

AAGATACTGATAATTCCAGTTTGTCAACCAACCTGATGTTACTTTAAGCTTACTCCCTTCAAACGAAACAGAAAAAACT
AAAATCACTATAGTAAAAACCTTCAATGCTTCAG

SEQ ID NO:3

AAGATACTGATAATTCAGTTTGTCAACCACCACCTGCTAAATTATCTGTTGTCAGTTTGGCCCTCCTCCAATGgtact
ccagAGGTTGAAACAACAAGCCTCAATGATGTTACTTTAAGCTTACTCCCTTCAAACGAAACAG

SEQ ID NO:4

AAGATACTGATAATTCCAGTTTGTCAACCACCACCTGAGGTTGAAACAACAAGCCTCAATGATGTTACTTTAAGCTTACTC
CCTTCAAACGAAACAGAAAAAACTAAAATCACTATAGTAAAAACCTTCAATGCTTCAG

SEQ ID NO:5

AAGATACTGATAATTCCAGTTTGTCAACCACCACCTGAGGTTGAAACAACAAGCCTCAATGATGTTACTTTAAGCTTACTC
CCTTCAAACGAAACAG

SEQ ID NO:6

AAGATACTGATAATTCCAGTTTGTCAACCACCTGCTAAATTATCTGTTGTCAGTTTGGCCCCCTCCTCCAATGgtact
ccagATGTTACTTTAAGCTTACTCCCTTCAAACGAAACAG

SEQ ID NO:7

AAGATACTGATAATTCCAGTTTGTCAACCAACCTGCTAAATTATCTGTTGTCAGTTTTGCCCCCTCCTCCAATGgtact
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SEQ ID NO: 8

CGGGAGCGGCGGGGGCGGC¹GCCGAGGCC²GCGGGCGGGGGGAGGAGGGCCGCAGCCCCGGAGAGGGGAAAAGGCGGGCCGG
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SEQ ID NO:9

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SEQ ID NO:10

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SEQ ID NO:11

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SEQ ID NO:12

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SEQ ID NO:13

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SEQ ID NO:14

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SEQ ID NO: 15

ATGCTGCTTCCGAAGTATTGTCGACTTTAAACAGAACAGAAAAATCTAAAATCACTATATTAAAAACCTTCAATGCATCA
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SEQ ID no.16

16/60

SEQ ID#17

SEQ ID 17

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SEQ ID#18

SEQ ID no.18

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SEQ ID#19

SEQ ID no. 19

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SEQ ID#20

SEQ ID no.20

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SEO TD no.26

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SEQ ID no.27

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SEQ ID#29

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SEQ ID#30

SEQ ID no.30

translated from no.22 (nt 164 to 3214)

MVFSVRQCGHVGRTEEVLLTFKIFLVIICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPEVETTSLNDVTLS
LLPSNETEKTITIVKTFNASGVKQQRNICNLSSICNDSAFFRGEIMFQYDKESTVPQNQHITNGTLTGVLSELKRSE
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QSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDIVNTSSISDLENQVLQMEKALSLSLEPNLAGE
MINQVSRLLHSPDMLAPLAQRLLKVDDIGLQLNFSNTTISLTSPSLALAVIRVNASSFNNTTFFVAQDPANLQVSLETQ
APENSIGTITLPSLMNNLPAHDMELASRVQFNFFETPALFQDPSLENLSLISYVIVSSSVANLTVRNLTRNVTVTLKHIN
PSQDELTVRCVFDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTSFGVLLDLSRTSVLPAQMMALTFITYIGCGLSS
IFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNVLFLDSWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMY
LALVKVFNTYIRKYILKFCIVGWGPVAVVTIILTISPDPNYGLSGYKFPNGSPDDFCWINNNAVFYITVVGYFCVIFLL
NVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGAFFAWGPVNVTFMYLFAIFNTLQGFFIFIFYC
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SEQ ID#31

SEQ ID no.31

translated from no.23 (nt 72 to 3098)

MLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSKENGNSLLSPSAESSLVSLIPYSNGTPDAASEVLSTLNKTE
KSKITIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDEDHNVTONQDTANGTFAGVLSLSELKRSELNKTQLTL
SETYFIVCATAEAQSTVNCTFTVKLNETMNVCAMMVTFTQTVQIRPMEQCCCSPTPCPSSPEELEKLQCELQDPVCLAD
QPHGPPLSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLPSPQPTIPLASSPATDLPVQSVVVSSLP
QTDLSHTLSPVQSSIPSTTPAPSVPTLVTISTPPGETVVNTSTVSDLEAQVSQMEKALSLSLEPNLAGEMVNRVSKL
LHSPALLAPLAQRLLKVVDIAIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPTNLQVSLETPPENSIGA
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KCVFWDLGRNGGKGGWSSDGCSVKDKRMNETICTSHLTSFGILLDLSTRSLPPSQMMALTFITYIGCGLSSIIFLSVTLV
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TYIRKYILKFCIVGWGIPAVVVSIVLTISPDPNYGIGSYGKFPNGTPDDFCWINSNVVFYITVVGYFCVIFLLNVSMFIVV
LVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFaffawGPVNVTFMYLFAIFNTLQGGFFIFIFYCAAKENVRK
QWRRYLCCGKLRLAENSWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTTLLVNSDCSVHASGNGNASTERNGVSF
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SEQ ID#32

SEQ ID no.32

translated from no.27 (nt 60 to 3098)

MLFSGGQYSPVGRPEEVLLIYKIFLVIICFHAILVTSLENAGNSSLLSPSAESSLVSLVPYSNGTPDAASEVLSTLNRT
EKSKITILKTFNASGVKSQRNICNLSSICSDSVFFRGEIVFQHDDHYNVTQNQDIVNSTFAGVLSLSELKRTELNKTLOT
LSETYFIVCATAEAQNTLNCTFTVKLNETMNVCAMMVTFSVQIRPMEQCCSPRTPCPSSPEELEKLQCDLQDPVCLA
DQPHGPPVSSSSKPPVPVPQATIFSHVASDFSLAEPLDHALMTSSTPSLAQETRLPSPQPTISLTSSPAIDL PVQHVVAS
SSLPQTDLSHTLSPVQSSIPSPTTAAPSVPEKVVAISTPPGETVVNTSSVPDLEAQVSQMEKALSLSLEPNLAGEMVNR
VSKLLHSPLALLAPLAQRLLKVVD AIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPANLQVSLEAQAPKN
SIGAITLPSSLMNLPASEVELASRVQFNFFETPALFQDPSLENLSLISYVISSSVTNMTIKNLTRNVTVALKHINPSQD
DLTVKCVFWDLNRNGGRGGWSSDGC SVKEKRMNETICTSHLTSFGILLDL SRTSLPPSQMMALTFITYIGCGLSSIFLS
VTLVTYIAFEKIRRDYPSKILIQ LCAALLLNLFLLDSWIALYNARGFCISVAVFLHYFLLVSFTWMGLEAFHMYLALV
KVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISP DNYGIGSYGKFPNGTPDDFCWINSSVVFYITVVG YFCVIFLLNVSM
FIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFAWGPVNLT FMYLFAIFNTLQGFFIFIFYCAAKE
NVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNTLLVNSDCSVHASGNGNASTERN
GVFSVQNGDVCLHDLTGKQHMFS DKEDSCNGKSRMALRRTSKRGS LHFIEQM

HE6del_{ta}24seqHE6del_{ta}24

CGGGAGCGGGGGGGCGGGCGCCGAGGCCGCGGGCGGGGGAGGAGGGCCGAGCCCCGGAGAGGGGAAAAGGCGGGCCGG
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TCTGCTCTCAGTGGCTGATTTCTTCATTATTTTCTCTGGTCTCATTACATGGATGGGCTAGAGCAATTCATATG
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translated from HE6delta24(-up)

translated from HE6delta24 (nt 164 to 3061)

MVFSVRQCGHVGRTEEVLLTFKIFLVIICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPEVETTSLNDVTLS
LLPSNETEKTITIVKTFNASGVKQQRNICNLSSICNDSAFFRGEIMFYDKESTVPQNQHITNGTLTGVLSELKRSE
LNKTLQTLSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALERVKIRPMEHCCCSVRIPCPSSPEELGKLQCDLQ
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HFIEQM

translated from HE6delta24(+up)
translated from HE6delta24 (nt 2 to 3061)
GSGGGGAEEAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCGHVGRTTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPEVETTSNDVTL
LLPSNETEKTITIVKTFNASGVKQQRNICNLSSICNDSAFFRGEIMFYDKESTVPQNHITNGTLTGVLSELKRSE
LNKTLQTLSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALERVKIRPMEHCCCSVRIPCPSSPEELGKLQCDLQ
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APENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLENLSLISYVISSSVANLTVRNLTRNVTVTLKHIN
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IFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLFLLDSWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMY
LALVKVFNTYIRKYILKFCIVGWGVPVVVTIILTISPNDYGLGSYGKFPNGSPDDFCWINNNAVFYITVVGYFCVIFLL
NVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFAPFAWGPVNVTFMYLFAIFNTLQGFFIFIFYC
VAKENVRKQWRRYLCCGKLRLAENSGNASTERNVSVSVQNGDVCLHDFGKQHMFEKEDSCNGKGRMALRRTSKRGSL
HFIEQM

translated from SEQ ID16(+up)

translated from no. 16 (nt 2 to 3100)

GSGGGGAEAAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCQGHVGRTEEVLLTFKIFLV
IIICLHVVLVTSLEEDTDNSSLSPPPDVTLSLLPSNETGVKQPQRNICNLSSICNDSAFFRGEIMFYDKESTVPQNHITN
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MMALTFTITYIGCGLSSIIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLFLLDSWIALYKMQGLCISVAVFLHYF
LLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVVVTIILTISPDPNYGLGSYGKFPNGSPDDFCWINNNA
VFYITVVGYFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFAGFAWGPVNVTFMYLF
AIFNTLQGGFFIFIFYCVAKENVRKQWRRYLCCGKLRLENSDWSKTATNGLKKQTVNQGVSSSSNSLQSSSNSTNSTTLL
VNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHMFEKEDSCNGKGRMALRRTSKRGSLSHFIEQM

translated from SEQ ID16(-up)

translated from no.16 (nt 164 to 3100)

MVFSVRQCGHVGRTEEVLLTFKIFLVIICLHVVLVTSLEEDTDNSSLSPPPDVTLSLLPSNETGVKQQRNICNLSSICND
SAFFRGEIMFQYDKESTVPQNHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMN
ACAAIAALERVKIRPMEHCCCSVRIPCSSPEELGKLQCDLQDPIVCLADHPRGPPFSSSSQSIPVVPRATVLSQVPKATS
FAEPPDYSPVTHNVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNT
TSAPPVQTDIVNTSSISDLENQVLQMEKALSLSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVVDIGLQLNFSN
TTISLTSPSLALAVIRVNASSFNNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETP
ALFQDPSLENLSLISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFWDLGRNGGRGGWSDNGCSVKDRRLNE
TICTCSHLTSFGVLLDLRTSVLPAQMMALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLV
FLLDSWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVAVVTIILTISP
DNYGLGSYGKFPNGSPDDFCWINNNAVFYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGL
TFLLGITWGF AFAFWGPVNVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQ
TVNQGVSSSSNSLQSSSNSTNTLLVNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFGKQHMFEKEDSCNGKG
RMALRRTSKRGSLSHFIEQM

translated from SEQ ID17(+up)

translated from no.17 (2 to 3142)

GSGGGGAEEAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSSELAVRMVFSVRQCGHVGRTEEVLLTFKIFLV
IIICLHVVLVTSLEEDTDNSSLSPPPDVTLSLLPSNETEKTKITIVKTFNASGVKQQRNICNLSSICNDSAFFRGEIMFY
DKESTVPQNHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALERVK
IRPMEHCCCSVRIPCPSPEELGKLQCDLQDPVCLADHPRGPPFSSSSQIPVVPRATVLSQVPKATSFAPPPDYSPVTH
NVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDIVN
TSSISDLENQVLQMEKALSLSLEPNLAGEMINQVSRLLHSPDMLAPLAQRLLKVVDIGLQLNFSNTTISLTSPSLAL
AVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLENLS
LISYVISSSVANLTVRNLTNRVTVTLKHINPSQDELTVRCVFDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTSFG
VLLDLSRTSVLPAQMMALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLVFLLDLSDWIALYKM
QGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGPVAVVVTIILTISPDPNYGLGSYGKFP
NGSPDDFCWINNNVAFYITVVGFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFAP
FAWGPVNVTFMYLFAIFNTLQGGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNS
LQSSSNSTNSTTLLVNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHMFEKEDSCNGKGRMALRRTSKRGS
LHFIEQM

translated from SEQ ID17(-up)

translated from no.17 (164 to 3142)

MVFSVRQCGHVGRTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPPDVLSLLPSNETEKTITIVKTFNASGVKQQRNICNLSSICNDSAFFRGEIMFQY
DKESTVPQNHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALERVK
IRPMEHCCSVRIPCPSPEELGKLQCDLQDPVCLADHPRGPPFSSSSQIPVVPRATVLSQVPKATSAEPPDYSPVTH
NVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDIVN
TSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLLHSPDMLAPLAQRLLKVVDIGLQLNFSNTTISLTSPSLAL
AVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLENLS
LISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFWDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTSFG
VLLDLSRTSVLPAQMMALTFITYIGCGLSSIIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLLNLVFLDLSWIALYKM
QGLCISVAVFLHYFLVLSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVAVVTIILTISPDPNYGLGSYGKFP
NGSPDDFCWINNNAVFIYITVVGYFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFAP
FAWGPVNVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSSNS
LQSSSNSTNSTTLLVNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFGKQHMFEKEDSCNGKGRMALRRTSKRGS
LHFIEQM

SEQ ID NO:40

translated from SEQ ID18(+up)

translated from no.18 (nt 2 to 3172)

GSGGGGAEAAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCGHVGRTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPEVETTSLNDVTLSELLPSNETGVKQPQRNICNLSSICNDSA
FFRGEIMFQYDKESTVPQNHITNGTLTGVLSELKRSELNKTQLSETYFIMCATAEAQSTLNCTFTIKLNNTMNAC
AAIAALERVKIRPMEHCCCSVRIPCPSPEELGKLQCDLQDPIVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFA
EPPDYSPVTHNVPSPIGEIQLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTS
APPVQTDIVNTSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVVDIGLQLNFSNTT
ISLTSPSLALAVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPAL
FQDPSLENLSLISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFDLGRNGGRGGWSDNGCSVKDRRLNETI
CTCSHLTSFGVLLDLRTSVLPAQMMALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILQLCAALLLNLFVFL
LDSWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGPVAVVVTIILTISPDN
YGLGSYGKFPNGSPDDFCWINNNVAFYITVVGYFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTF
LLGITWGAFFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSOWSKTATNGLKKQTV
NQGVSSSNSLQSSSNSTNSTLLVNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHFNEKEDSCNGKGRM
ALRRTSKRGSLSHFIEQM

translated from no.18 (nt 164 to 3172)
translated from SEQ ID18(-up)

MVFSVRQCGHVGRTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPEVETTSLNDVTLSSLPSNETGVKPKQRNICNLSSICNDSA
FFRGEIMFYDKESTVPQNQHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMNAC
AAIAALERVKIRPMEHCCCSVRIPCSSPEELGKLQCDLQDPVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFA
EPPDYSPVTHNVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTS
APPVQTDIVNTSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVVDDIGLQLNFSNTT
ISLTSPSLALAVIRVNASSFNNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPAL
FQDPSLENLSLISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFWDLGRNGGRGGWSDNGCSVKDRRLNETI
CTCSHLTSFGVLLDLSRTSVLPAQMMALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQLCAALLLNVLVFL
LDSWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVAVVTIILTISPDN
YGLGSYGKFPNGSPDDFCWINNNNAVFIYITVVGYFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTF
LLGITWGFAPFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQTV
NQGVSSSSNSLQSSSNSTNSTLLVNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHFNEKEDSCNGKGRM
ALRRTSKRGSLSHFIEQM

translated from SEQ ID19(+up)

translated from no. 19 (nt 2 to 3166)

GSGGGGAEAAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCGHVGRTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPEVETTSLNDVTLSLLPSNETEKT KITIVKTFNASGVKPQRNICNLSSICNDSAFF
RGEIMFYDKESTVPQNHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAA
IAALERVKIRPMEHCCCSVRIPCPSPEELGKLQCDLQDPVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFAEP
PDYSPVTHNVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAP
PVQTDIVNTSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVDDIGLQLNFSNTTIS
LTSPSLALAVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQ
DPSLENLSLISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFDLGRNGGRGGWSONGCSVKDRRLNETICT
CSHLTSFGVLLDLSRTSVLPAQMMALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLFLLD
SWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVAVVTIILTISPDNYG
LGSYGKFPNGSPDDFCWINNNAVFYITVVGFCVIFLLNVSMFIVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFL
GITWGF AFFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQ
GVSSSSNSLQSSSNSTNSTLLVNDCSVHASGNNGASTERNGVSVQNGDVCLHDFTGKQHMFEKEDSCNGKGRMAL
RRTSKRGS LHFIEQM

translated from SEQ ID19(-up)

SEQ ID NO:43

translated from no. 19 (nt 164 to 3166)

MVFSVRQCGHVGRTTEEVLTKIFLV
IIICLHVVLVTSLEEDTDNSSLSPPEVETTSLNDVTLSELLPSNETEKTITIVKTFNASGVKQQRNICNLSSICNDSAFF
RGEIMFQYDKESTVPQNHITNGTLTGVLSELKRSELNKTQLSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAA
IAALERVKIRPMEHCCSVRIPCSSPEELGKLQCDLQDPVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFAEP
PDYSPVTHNVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAP
PVQTDIVNTSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVDDIGLQNFNTTIS
LTSPSLALAVIRVNASSFNTTTFVAQDPANLQVSLETOAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQ
DPSLENLSLISYVISSSVANLTVRNLTNRNVTTLKHINPSQDELTVRCVFDLGRNGGRGGWSDNGCSVKDRRLNETICT
CSHLTSFGVLLDLRTSVLPAQMMALTFITYIGCGLSSIIFLSVTLVTYIAFEKIRRDYPSKILIQLCALLLNLFLLD
SWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVAVVTIILTISPDPNYG
LGSYGKFPNGSPDDFCWINNNNAVFIYITVVGIFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFL
GITWGFAPFAWGPVNVTFMYLFAIFNTLQGGFFIFIFCVAKENVRKQWRRYLCCGKLRLAENSWSKTATNGLKKQTVNQ
GVSSSSNSLQSSSNSTNTTLLVNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFGKQHMFEKEDSCNGKGRMAL
RRTSKRGSLSHFIEQM

translated from SEQ ID20(+up)

translated from no.20 (nt 2 to 3124)

GSGGGGAEAAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCGHVGRTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPEVETTSLNDVTLSELLPSNETGVKPQRNICNLSSICNDSAFFRGEIMFYDKESTV
PQNQHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALERVKIRPMEH
CCCSVRIPCPSPEELGKLQCDLQDPVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFAPPDYSPVTHNVPSPI
GEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDIVNTSSISD
LENQVLQMEKALSLGSLEPNLAGEMINQVSRLLHSPDMLAPLAQRLLKVDDIGLQLNFSNTTISLTSPSLALAVIRVN
ASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLENLSLISYVI
SSSVANLTVRNLTRNVTVTLKHINPSQDELTVRVFWDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTSFGVLLDLS
RTSVLPAQMMALTFITYIGCGLSSIIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNVLVFLDSWIALYKMQGLCIS
VAVFLHYFLLVSTWGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVVVTIILTISPDNYGLGSYGKFPNGSPDD
FCWINNNAVFYITVVGYFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFFAFFAWGPV
NVTFMLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSWSKTATNGLKKQTVNQGVSSSSNSLQSSSN
STNSTLLVNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHMFNEKEDSCNGKGRMALRRTSKRGSLSHFIEQ
M

translated from SEQ ID20(-up)

translated from no.20 (nt 164 to 3124)

MVFSVRQCGHVGRTEEVLLTFKIFLV
IIICLVVLVTSLEEDTDNSSLSPPEVETTSLNDVTLSELLPSNETGVKQQRNICNLSSICNDSAFFRGEIMFQYDKESTV
PQNQHITNGTLTGVLSELKRSELNKTQLSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALERVKIRPMEH
CCCSVRIPCPSPEELGKLQCDLQDPIVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFAEPPDYSPVTHNVPSPI
GEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDIVNTSSISD
LENQVLQMEKALSLSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVDDIGLQLNFSNTTISLTSPSLALAVIRVN
ASSFNTTTFVAQDPANLQVSLETOAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLENLSLISYVI
SSSVANLTVRNLTRNVTVTCLKHINPSQDELTVRCVFWDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTSFGVLLDLS
RTSVLPAQMMALTFTYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLVFLLDLSDWIALYKMQGLCIS
VAVFLHYFLLVSTWGMLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVVVTIILTISPDNYGLGSYGKFPNGSPDD
FCWINNNNAVFYITVVGYFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFFAWGPV
NVTFMLFAIFNTLQGGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSWSKTATNGLKKQTVNQGVSSSSNSLQSSSN
STNSTLLVNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHMFEKEDSCNGKGRMALRRTSKRGS LHFIEQ
M

translated from SEQ ID21(+up)

translated from no.21 (nt 2 to 3148)

GSGGGGAEAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCGHVGRTEEVLLTFKIFLV
IIICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPDVTLSLLPSNETGVKPQRNICNLSSICNDSAFFRGEIMF
QYDKESTVPQNHITNGTLTGVLSELKRSELNKTQLSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALER
VKIRPMEHCCCSVRIPCPSSPEELGKLQCDLQDPVCLADHPRGPPFSSSQSIPVVPRA TVLSQVPKATSAEPPDYSPV
THNVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDI
VNTSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVDDIGLQLNFSNTTISLTSPSL
ALAVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLEN
LSLISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFWDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTS
FGVLLDLSRTSVLPAQMMALTFITYIGCGLSSI FL SVTLVTYIAFEKIRRDYPSKILIQ LCAALLLNLFLLDSWIALY
KMQGLCISVAVFLHYFLLVSTWGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVVVTIILTISP DNYGLGSYGK
FPNGSPDDFCWINNNVAFYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF
AFFAWGPVNVTFMYLFAIFNTLQGGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSS
NSLQSSSNSTNTTLLVNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHMFNEKEDSCNGKGRMALRRTSKR
GSLHFIEQM

SEQ ID NO:47

translated from SEQ ID21(-up)

translated from no.21 (nt 164 to 3148)

MVFSVRQCGHVGRTTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPDVTLSLLPSNETGVKPQRNICNLSSICNDSAFFRGEIMF
QYDKESTVPQNHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALER
VKIRPMEHCCCSVRIPCSPSPEELGKLQCDLQDPVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSF AEPPDYSPV
THNVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSTVVSAPANVNTTSAPPVQTDI
VNTSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVDDIGLQNFNTTISLTSPSL
ALAVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLEN
LSLISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTS
FGVLLDLRTSVLPAQMMALTFITYIGCGLSSIIFLSVTLVTYIAFEKIRRDYPSKILIQLC AALLLNLFLLDSWIALY
KMQGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVVVVTIILTISP DNYGLGSYGK
FPNGSPDDFCWINNNAVFYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF
AFFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLR LAENSDWSKTATNGLKKQTVNQGVSSSS
NSLQSSSNSTNTTLLVNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHMFNEKEDSCNGKGRMALRRTSKR
GSLHFIEQM

translated from SEQ ID22(+up)

translated from no.22 (nt 2 to 3214)

GSGGGGAEAAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCGHVGRTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPEVETTSLNDVTL SLLPSNETEKT KITIVKTFNASGVKPQ
RNICNLSSICNDSAFFRGEIMFQYDKESTVPQNQHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLN
CTFTIKLNNTMNACAAIAALERVKIRPMEHCCCSVRIPCPSPEELGKLQCDLQDPVCLADHPRGPPFSSSSQIPVVP
ATVLSQVPKATSFAPPDYSPVTHNVPSPIGEIQLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGT PPPVKASFS
SPTVSAPANVNTTSAPPVQTDIVNTSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLLHSPDMLAPLAQRLLKV
VDDIGLQLNFSNTTISLTSPSLALAVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSLMNNLPAHDMEL
ASRVQFNFFETPALFQDPSLENLSLISYVISSSVANLTVRNLTRNVTVT LKHINPSQDELTVRCVFDLGRNGGRGGWSD
NGCSVKDRRLNETICTCSHLTSFGVLLDLSRTSVLPAQMMALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILI
QLCAALLLNLFLLDSWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVP
AVVTIILTISPDNYGLGSYGKFPNGSPDDFCWINNNAVFYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRK
TSIQDLRSIAGLTFLLGITWGF AFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENS
WSKTATNGLKKQTVNQGVSSSSNSLQSSSNSTNSTTLLVNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHM
FNEKEDSCNGKGRMALRRTSKRGS LHFIEQM

translated from SEQ ID23(+up)

translated from no.23 (nt 3 to 3098)

QPVTGTRRCTRSFLPISSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSLKENGNSLLSPSAESSLVS
LIPYSNGTPDAASEVLSTLNKTEKSKITIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDEHDHNVTONQDTANG
TFAGVLSLSELKRSELNKTQLTLSETYFIVCATAEAQSTVNCTFTVKLNETMNVCAMMVTFTQTVQIRPMEQCCCSPTPC
PSSPEELEKLQCELODPDIVCLADQPHGPPLSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLPSPQP
TIPLASSPATDLPVQSVVVSSLPQTDLSHTLSPVQSSIPSPPTTPAPSVPTLVTISTPPGETVVNTSTVSDLEAQSQME
KALSLGSLEPNLAGEMVNRVSKLLHSPALLAPLAQRLLKVVDIAIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTF
AAQDPTNLQVSLETPPPENSIGAITLPSSLMNLPANDVELASRIQFNFFETPALFQDPSLENLTLISYVISSSVTNMTI
KNLTRNVTVALKHINPSPDDLTVKCVFWDLGRNGGKGGWSSDGC SVKDKRMNETICTCSHLTSFGILLDLRTSLPPSQM
MALTFITYIGCGLSSIFLSVTLVITYIAFEKIRRDYPSKILIQCAALLLNLIIFLLDSWIALYNTRGFCIAVAVFLHYFL
LVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISPONYGIGSYGKFPNGTPDDFCWINSNVV
FYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFAWGPVNVTFMYLFA
IFNTLQGFFIFIFYCAAKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTLLV
NSDCSVHASGNGNASTERNGVSFSVQNGDVCLHDLTGKQHMFSKEDSCNGKSRIALRRTSKRGS LHFIEQM

translated from SEQ ID24(+up)
translated from no.24 (nt 3 to 3060)

QPVTGTRRCTRSFLPISSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSLKENGNSLLSPSDAASEVL
STLNKTEKSKITIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDEHDHNVTONQDTANGTFAGVLSLSELKRSEL
NKTQLTLSETYFIVCATAEAQSTVNCTFTVKNLNETMNVCMAMVTFQTVQIRPMEQCCCSPTPCPSSPEELEKLQCELQD
PIVCLADQPHGPPLSSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLPSQPQTIPLASSPATDLPVQS
VVVSSLPQTDLSHTLSPVQSSIPSPTTPAPSVPTELVTISTPPGETVVNTSTVSDLEAQVSQMEKALSLSLEPNLAGEM
VNRVSKLLHSPALLAPLAQRLLKVDAIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPTNLQVSLETTP
PENSIGAITLPSSLMNNLPANDVELASRIQFNFFETPALFQDPSLENLTLISYVISSSVTNMTIKNLTRNVTVALKHINP
SPDDLTVKCVFWDLGRNGGKGGWSSDGC SVKDKRMNETICTCSHLTSFGILLDL SRTSLPPSQMMALTFITYIGCGLSSI
FLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLI FL L DSWIALYNTRGFCIAVAVFLHYFLLVSFTWMGLEAFHMYL
ALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISPDNYGIGSYGKFPNGTPDDFCWINSNVVFYITVVG YFCVIFLLN
VSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF A FFAWGPVNVTFMYLFAIFNTLQGGFFIFIFYCA
AKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTTLLVNSDCSVHASGNGNAST
ERNGVFSVQNGDVCLHDLTGKQHMFSDKEDSCNGKSRIALRRTSKRGSLHFIEQM

SEQ ID NO: 51

translated from SEQ ID24(-up)

translated from no.24 (nt 72 to 3060)

MLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSLKENGNSLLSPSDAASEVL
STLNKTEKSKITIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDEDHNVTONQDTANGTFAGVLSLSELKRSEL
NKTQLTLSETYFIVCATAEAQSTVNCTFTVKLNETMNVCMAMVTFQTVQIRPMEQCCSPRTPCPSSPEELEKLQCELQD
PIVCLADQPHGPPLSSSSKPVVPQATTIISHVASDFSLAEPLDHALMTPSTPSLTQESNLPSQPPTIPLASSPATDLPVQS
VVVSSLPQTDLSHTLSPVQSSIPSPPTTPAPSVPTTELVTISTPPGETVVNTSTVSDLEAQVSQMEKALSLSLEPNLAGEM
VNRVSKLLHSPALLAPLAQRLLKVVDAGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPTNLQVSLETTP
PENSIGAITLPSSLMNNLPANDVELASRIQFNFFETPALFQDPSLENLTLISYVISSSVTNMTIKNLTRNVTVALKHINP
SPDDLTVKCVFWDLGRNGGKGGWSSDGCSVKDKRMNETICTCSHLTSFGILLDLRTSLPPSQMMALTFITYIGCGLSSI
FLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLIFFLLDSWIALYNTRGFCIAVAVFLHYFLLVSFTWMGLEAFHMYL
ALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISPDNYGIGSYGKFPNGTPDDFCWINSNVVYFITYVVGYFCVIFLLN
VSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFAPFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCA
AKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTTLLVNSDCSVHASGNGNAST
ERNGVSVSVQNGDVCLHDLTGKQHMFSKEDSCNGKSRIALRRTSKRGSLSHFIEQM

translated from SEQ ID25(+up)

translated from no.25 (nt 3 to 3089)

QPVTGTRRCTRSFLPISSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSCLKENGNSLLSPSAESSLVS
LIPYSNDAASEVLSTLNKTEKSKITIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDHEDHNVTONQDTANGTFA
GVLSLSELKRSELNKTQLTLSEYFIVCATAEAQSTVNCTFTVKLNETMNVCAMMVTFTQTVQIRPMEQCCCSPRTPCPSS
PEELEKLQCELQDPPIVCLADQPHGPPLSSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLPSQPPTIP
LASSPATDLPVQSVVVSSLPQTDLSHTLSPVQSSIPSPTTPAPSVPTELVTISTPPGETVVNTSTVSDLEAQVSQMEKAL
SLGSLEPNLAGEMVNRVSKLLHSPPALLAPLAQRLLKVVDAGLQNLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQ
DPTNLQVSLETPPPENSIGAITLPSSLMNNLPANDVELASRIQFNFFETPALFQDPSLENLTLISYVISSSVTNMTIKNL
TRNVTVALKHINPSPDDLTVKCVFWDLGRNGGKGGWSSDGC SVKDKRMNETICTCSHLTSFGILLDLRSLSLPPSQMMAL
TFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLIFFLLDSWIALYNTRGFCIAVAVFLHYFLLVS
FTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISPNDYIGISYKFPNGTPDDFCWINSNVFYI
TVVGYFCVIFLLNVSMFIIVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFFAWGPVNVTFMYLFAIFN
TLQGFFIFIFYCAAKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTLLVNSD
CSVHASGNNGNASTERNGVSFSVQNGDVCLHDLTGKQHMFSKEDSCNGKSRIALRRTSKRGSLSHFIEQM

translated from SEQ ID25(-up)

translated from no.25 (nt 72 to 3089)

MLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSKENGNSLLSPSAESSLVS
LIPYSNDAASEVLSTLNKTEKSKITIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDEDHNVTONQDTANGTFA
GVLSELKRSELNKTQLSETYFIVCATAEAQSTVNCTFTVKLNETMNVCAMMVTFTVQIRPMEQCCSPRTPCPSS
PEELEKLQCELQDPIVCLADQPHGPPLSSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLPSPQPTIP
LASSPATDLPVQSVVVSSLPQTDLSHTLSPVQSSIPSPPTTPAPSVPTELVTISTPPGETVVNTSTVSDLEAQSQMEKAL
SLGSLEPNLAGEMVNRVSKLLHSPALLAPLAQRLLKVVDAGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTFAAQ
DPTNLQVSLETPPPENSIGAITLPSSLMNNLPANDVELASRIQFNFFETPALFQDPSLENLTLISYVISSSVTNMTIKNL
TRNVTVALKHINPSPDDLTVKCVFWDLGRNGGKGGWSSDGC SVKDKRMNETICTCSHLTSFGILLDL SRTSLPPSQMMAL
TFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLIFFLLDSWIALYNTRGFCIAVAVFLHYFLLVS
FTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISP DNYGIGSYGKFPNGTPDDFCWINSNVVFI
TVVGYFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFAWGPVNVTFMYLFAIFN
TLQGFFIFIFYCAAKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTLLVNSD
CSVHASGNNGNASTERNGVSFSVQNGDVCLHDLTGKQHMFS DKEDSCNGKSRIALRRTSKRGS LHFIEQM

translated from SEQ ID26(+up)

translated from 26 (nt 3 to 3017)

QPVTGTRRCTRSLPISSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSKDAASEVLSTLNKTEKSKI
TIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDEDHNVTONQDTANGTFAGVLSLSELKRSELNKTQLTSETY
FIVCATAEAQSTVNCTFTVKLNETMNVCAMMVTFTQTVQIRPMEQCCCSPTPCPSSPEELEKLQCELDPIVCLADQPHG
PPLSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLPSQPPTIPLASSPATDLPVQSVVVSSLPQTDL
SHTLSPVQSSIPSTTPAPSVPTTELVTISTPPGETVVNTSTVSDLEAQVSQMEKALSLGSLEPNLAGEMVNRVSKLLHSP
PALLAPLAQRLLKVVDAGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPTNLQVSLETPPPENSGAITLP
SSLMNNLPANDVELASRIQFNFFETPALFQDPSLENLTLSYVISSSVTNMTIKNLTRNVTVALKHINPSPDDLTVKCVF
WDLGRNGGKGGWSSDGC SVKDKRMNETICTCSHLTSFGILLDLRSTSLPPSQMMALTFITYIGCGLSSI FL SVTLVTYIA
FEKIRRDYPSKILIQLCAALLLNLI FL LDSWIALYNTRGFCIAVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIR
KYILKFCIVGWGIPAVVVSIVLTISP DNYGIGSYGKFPNGTPDDFCWINSNVVFYITVVGYFCVIFLLNVSMFIVVLVQL
CRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCAAKENVRKQWRR
YLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTTLLVNSDCSVHASGNNGNASTERNGVSFSVQN
GDVCLHDLTGKQHMFSKEDSCNGKSRIALRRTSKRGSLHFIEQM

translated from SEQ ID26(-up)

SEQ ID NO:55

translated from 26 (nt 72 to 3017)

MLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSCLKDAASEVLSTLNKTEKSKI
TIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDEHNVTONQDTANGTFAGVLSLSELKRSELNKTQLSETY
FIVCATAEAQSTVNCTFTVKLNETMNVCAMMVTFQTVQIRPMEQCCSPRTPCPSSPEELEKLQCELDQPIVCLADQPHG
PPLSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLSPQPTIPLASSPATDLPVQSVVVSSLPQTDL
SHTLSPVQSSIPSTTPAPSVPTLVTISTPPGETVVNTSTVSDLEAQVSQMEKALSLGSLEPNLAGEMVNRVSKLLHSP
PALLAPLAQRLLKVVDIAIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPTNLQVSLETPPPENSIGAITLP
SSLMNLPANDVELASRIQFNFFETPALFQDPSLENLTLSYVISSSVTNMTIKNLTRNVTVALKHINPSPDDLTVKCVF
WDLGRNGGKGGWSSDGC SVKDKRMNETICTCSHLTSFGILLDLRSLSLPPSQMMALTFITYIGCGLSSIFLSVTLVTYIA
FEKIRRDYPSKILIQLCAALLLNLI FLDSWIALYNTRGFCIAVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIR
KYILKFCIVGWGIPAVVVSIVLTISP DNYGIGSYGKFPNGTPDDFCWINSNVVYITVVG YFCVIFLLNVSMFIVVLVQL
CRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCAAKENVRKQWRR
YLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTLLVNSDCSVHASGNGNASTERNGVSFSVQN
GDVCLHDLTGKQHMFSKDSCNGKSRIALRRTSKRGS LHFIEQM

translated from SEQ ID27(+up)

translated from no. 27 (nt 3 to 3098)

RTCRCAQSLLPLFSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHAILVTSCLKENAGNSSLLSPSAESSLVSLVP
YSNGTPDAASEVLSTLNRTEKSKITILKTFNASGVKSQRNICNLSSICSDSVFFRGEIVFQHDDHYNVTQNQDIVNSTFA
GVLSELKRTLNKTLQTLSETYFIVCATAEAQNTLNCTFTVKLNETMNVCMAMVTFKSVQIRPMEQCCCSPTPCPSS
PEELEKLQCDLQDPVCLADQPHGPPVSSSSKVPVVPQATIFSHVASDFSLAEPLDHALMTSSTPSLAQETRLPSPQPT
ISLTSSPAIDLVPVQHVVASSSLPQTDLSHTLSPVQSSIPSPTTAAPSVPEKVVAISTPPGETVVNTSSVPDLEAQVSQME
KALSLGSLEPNLAGEMVNRVSKLLHSPALALLAPLAQRLLKVVDIAIGLQNFSSTTISLTSPSLALAVIRVNASNFNTTTF
AAQDPANLQVSLEAQAPKNSIGAITLPSSLMSNLPASEVELASRVQFNFFETPALFQDPSLENLSLISYVISSSVTNMTI
KNLTRNVTVALKHINPSQDDLTVKCVFWDLNRNGGRGGWSSDGC SVKEKRMNETICTCSHLTSFGILLDL SRTSLPPSQM
MALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLFLLDSWIALYNARGFCISVAVFLHYFL
LVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISPDNYGIGSYGKFPNGTPDDFCWINSSV
FYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFAWGPVNLTFMYLFA
IFNTLQGFFIFIFYCAAKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTLLV
NSDCSVHASGNGNASTERNGVSFSVQNGDVCLHDLTGKQHMFSDKEDSCNGKSRMALRRTSKRGS LHFIEQM

translated from SEQ ID28(+up)

translated from no.28 (nt 3 to 3050)

RTCRCAQSLLPLFSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHAILVTSLENAGNSSLLSPSDAASEVLSTL
NRTEKSKITILKTFNASGVKSQRNICNLSSICSDSVFFRGEIVFQHDDHYNVTQNQDIVNSTFAGVLSLSELKRTELNKT
LQTLSETYFIVCATAEAQNTLNCTFTVKLNENMNVCMAMVTFKSVQIRPMEQCCSPRTPCPSSPEELEKLQCDLQDPIV
CLADQPHGPPVSSSSKPVVPVQATIFSHVASDFSLAEPLDHALMTSSTPSLAQETRLPSPQPTISLTSSPAIDLVPQHV
VASSSLPQTDLSHTLSPVQSSIPSPTTAAPSVPEKVVAISTPPGETVVNTSSVPDLEAQVSQMEKALSLSLEPNLAGEM
VNRVSKLLHSPALLAPLAQRLLKVVDIAIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPANLQVSLEAQA
PKNSIGAITLPSSLSMNLPASEVELASRVQFNFFETPALFQDPSLENLSLISYVISSSVTNMTIKNLTRNVTVALKHINP
SQDDLTVKCVFWDLNRNGGRGGWSSDGC SVKEKRMNETICTCSHLTSFGILLDLRSLSLPPSQMMALTFITYIGCGLSSI
FLSVTLVTYIAFEKIRRDYPSKILIQLC AALLLNLFLLDSWIALYNARGFCISVAVFLHYFLLVSFTWMGLEAFHMYL
ALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISPDNYGIGSYGKFPNGTPDDFCWINSSVVFYITVVGYFCVIFLLN
VSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFAWGPVNLT FMYLFAIFNTLQGFFIFIFYCA
AKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTTLLVNSDCSVHASGNGNAST
ERNGVSVSVQNGDVCLHDLTGKQHMFSDKEDSCNGKSRMALRRTSKRGS LHFIEQM

translated from no.28 (nt 60 to 3050) translated from SEQ ID28(-up) SEQ ID NO:58

MLFSGGQYSPVGRPEEVLLIYKIFLVIICFHAILVTSLENAGNSSLLSPSDAASEVLSTL
NRTEKSKITILKTFNASGVKSQRNICNLSSICSDSVFFRGEIVFQHDDHYNVTQNQDIVNSTFAGVLSLSELKRTELNKT
LQTLSETYFIVCATAEAQNTLNCTFTVKLNETMNVCMAMVTFKSVQIRPMEQCCCSPTPCPSSPEELEKLQCDLQDPIV
CLADQPHGPPVSSSSKPVVPVQATIFSHVASDFSLAEPLDHALMTSSTPSLAQETRLPSPQPTISLTSSPAIDLVPQHV
VASSSLPQTDLSHTLSPVQSSIPSPTTAAPSVEKVVAISTPPGETVVNTSSVPDLEAQSQMEKALSLGSLEPNLAGEM
VNRVSKLLHSPALALLAPLAQRLLKVDAIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPANLQVSLEAQA
PKNSIGAITLPSSLMSNLPASEVELASRVQFNFFETPALFQDPSLENLSLISYVISSSVTNMTIKNLTRNVTVALKHINP
SQDDLTVKCVFWDLNRNGGRGGWSSDGC SVKEKRMNETICTCSHLTSFGILLDL SRTSLPPSQMMALTFITYIGCGLSSI
FLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNVLFLDSWIALYNARGFCISVAVFLHYFLLVSFTWMGLEAFHMYL
ALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISPDNYGIGSYGKFPNGTPDDFCWINSSVVFYITVVG YFCVIFLLN
VSMFIWVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFWGPVNLT FMYLFAIFNTLQGFFIFIFYCA
AKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTLLVNSDCSVHASGNGNAST
ERNGVSF SVQNGDVCLHDLTGKQHMFSDKEDSCNGKSRMALRRTSKRGS LHFIEQM

SEQ ID NO:59

translated from SEQ ID29(+up)

translated from no.29 (nt 3 to 3014)

RTCRCAQSLLPLFSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHAILVTSLKDAASEVLSTLNRTEKSKITILK
TFNASGVKSQRNICNLSSICSDSVFFRGEIVFQHDDHYNVTQNQDIVNSTFAGVLSLSELKRTELNKTQLTSETYFIVC
ATAEAQNTLNCTFTVKNLNETMNVCAMMVTFSVQIRPMEQCCCSPTPCPSSPEELEKLQCDLQDPVCLADQPHGPPVS
SSSKPVVPVQATIFSHVASDFSLAEPLDHALMTSSTPSLAQETRLPSPQPTISLTSSPAIDLVPQHVAVASSSLPQTDLS
HTLSPVQSSIPSPTTAAPSVPEKVVAISTPPGETVVNTSSVPDLEAQVSQMEKALSLGSLEPNLAGEMVNRVSKLLHSPL
ALLAPLAQRLLKVVDAILQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPANLQVSLAQAPKNSIGAITLPS
SLMSNLPASEVELASRVQFNFFETPALFQDPSLENLSLISYVISSSVTNMTIKNLTRNVTVALKHINPSQDDLTVKCVFW
DLNRNGGRGGWSSDGC SVKEKRMNETICTCSHLTSFGILLDL SRTSLPPSQMMALTFITYIGCGLSSIFLSVTLVTYIAF
EKIRRDYPSKILIQCAALLLNLVFLLD SWIALYNARGFCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRK
YILKFCIVGWGIPAVVVSIVLTISP DNYGIGSYGKFPNGTPDDFCWINSSVVFYITVVGYFCVIFLLNVSMFIVVLVQLC
RIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFWGPVNLT FMYLFAIFNTLQGGFFIFIFYCAAKENVRKQWRRY
LCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTTLLVNSDCSVHASGNGNASTERNGVSFSVQNG
DVCLHDLTGKQHMFS DKEDSCNGKSRMALRRTSKRGSLHFIEQM

translated from SEQ ID29(-up)

SEQ ID NO:60

translated from no.29 (nt 60 to 3014)

MLFSGGQYSPVGRPEEVLLIYKIFLVIICFHAILVTSLKDAASEVLSTLNRTEKSKITILK
TFNASGVKSQRNICNLSSICSDSVFFRGEIVFQHDDHYNVTQNQDIVNSTFAGVLSLSELKRTELNKTLQTLSETYFIVC
ATAEAQNTLNCTFTVKLNETMNVCAMMVTFKSVQIRPMEQCCCSPTPCPSSPEELEKLQCDLQDPVCLADQPHGPPVS
SSSKPVPVVPQATIFSHVASDFSLAEPLDHALMTSSTPSLAQETRLPSPQPTISLTSSPAIDL PVQHVVASSSLPQTDLS
HTLSPVQSSIPSPTTAAPSVPEKVVAISTPPGETVVNTSSVPDLEAQVSQMEKALSLGSLEPNLAGEMVNRVSKLLHSPL
ALLAPLAQRLLKVVD AIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPANLQVSLEAQAPKNSIGAITLPS
SLMSNLPASEVELASRVQFNFFETPALFQDPSLENLSLISYVISSSVTNMTIKNLTRNVTVALKHINPSQDDLT VKCVFW
DLNRNGGRGGWSSDGC SVKEKRMNETICTSHLTSFGILLDL SRTSLPPSQMMALTFITYIGCGLSSIFLSVTLVTYIAF
EKIRRDYPSKILIQ LCAALLLNLFLLDSWIALYNARGFCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRK
YILKFCIVGWGIPAVVVSIVLTISP DNYGIGSYGKFPNGTPDDFCWINSSVVFYITVVG YFCVIFLLNVSMFIVVLVQLC
RIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFAWGPVNLT FMYLFAIFNTLQGFFIFIFYCAAKENVRKQWRRY
LCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTLLVNSDCSVHASGNNGNASTERNGVSFSVQNG
DVCLHDLTGKQHMFS DKEDSCNGKSRMALRRTSKRGS LHFIEQM